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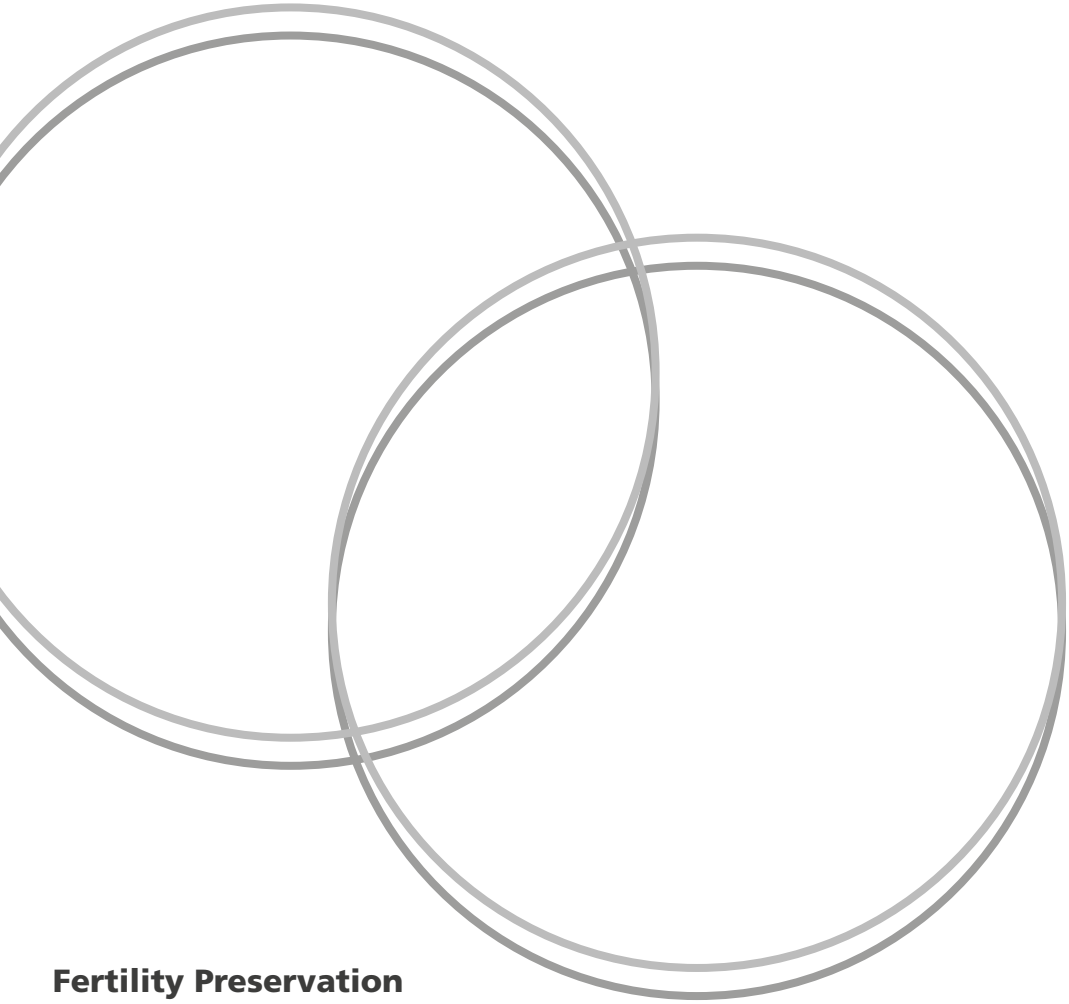
Ovarian Tissue Cryopreservation: Patient



Fertility Preservation

Ovarian tissue cryopreservation

This leaflet has been produced by the Oxford University Hospitals NHS Foundation Trust (OUH) offered though the Future Fertility Programme Oxford (FFPO) which is known to provide information about one type of fertility preservation treatment, ovarian tissue cryopreservation. This type of fertility treatment is available to patients who, due to the proposed treatment or diagnosis are at high risk of infertility and who cannot store mature eggs either due to age or the urgency to start treatment.

The Future Fertility Programme Oxford offers advice and treatment to children and young adults at risk of infertility. We accept referrals from across England, Wales and Northern Ireland and can also, in some cases, offer advice and treatment to patients from other countries who are having treatment for their underlying problem in England.

Frequently Asked Questions about ovarian tissue cryopreservation

What is ovarian tissue?

The ovaries are part of the female reproductive system. A female is born with all the immature eggs that they will ever have. These immature eggs are contained within the outer layer (or cortex) of the ovaries. It is this outer layer of immature eggs and the supporting cells, blood, and lymph vessels that we that we refer to in this leaflet as 'ovarian tissue'. This ovarian tissue can be preserved by a specialised freezing technique called cryopreservation.

What is cryopreservation?

Cryopreservation is the method used to safely preserve various types of human tissue, including ovarian tissue. It involves slow controlled freezing of thin strips of tissue before transfer to storage in freezers at very low temperatures (approximately -170°C) using liquid nitrogen vapour. At these ultra-low temperatures, ovarian tissue can be safely stored for many years; preserving the hormone function and immature eggs within the tissue.

How successful is ovarian tissue cryopreservation?

Ovarian tissue cryopreservation programmes have been running in a number of centres around the world for over 25 years. Currently, the established way to use ovarian tissue is by thawing and re-implanting a patient's own tissue into (or near to) their remaining ovary, a technique known as "autologous transplantation" or auto-transplantation. The tissue establishes its own blood supply and starts to function as normal ovarian tissue. In over 90% of patients' hormone function is restored within 4 to 5 months, and there have been several hundred babies born to young women who have had their ovarian tissue auto-transplanted. Reports have shown live birth rates of between 30 to 40%, which is similar to success rates for other forms of fertility preservation such as IVF treatments.

Researchers across the world are exploring alternative ways of using ovarian tissue for creating pregnancies, and to improve the success rates. This is particularly important for patients where there could be a risk of cancer cells within the ovarian tissue. Treatment that could produce a mature egg without requiring tissue to be auto-transplanted would eliminate the risk of contamination of tissue with cancer cells.

How is ovarian tissue collected and stored?

To obtain the ovarian tissue for cryopreservation, one of the two ovaries is usually removed completely. This is usually done via key-hole surgery under general anaesthetic and is often planned alongside other procedures needed for delivery of treatment such as insertion of a central venous line. Whenever possible, the surgery will be performed in your treating hospital and the removed ovary will then be carefully packed and transported to the OUH tissue bank which is called the Oxford Cell and tissue biobank (OCTB) where it will be processed and stored.

At the designated tissue bank, the ovary will be prepared for freezing. Human tissue contains about 90% water and, to ensure that ice crystals do not form during freezing and destroy the cells, the tissue needs to be cut into very specific sized pieces and carefuly preserved by the specialist tissue bank team.

The process includes removing water from the cells and cryoprotectant can be taken adding preservative (called a cryoprotectant) which will replace the water. Once the water has been removed the tissue pieces are placed in the cryovials (small tubes) containing the cryoprotectant and transferred into a computer controlled machine which slowly cools them down to ultra-low temperature (-150°C). They are then transferred to a storage freezer at approximately -170°C where they can be safely preserved OCTB follows the legal requirements of the HFEA Act and the HT Act and will store tissue for a maximum of 55 years.

Will this increase the risk of premature ovarian failure (menopause)?

International research studies involving many thousands of women have shown that removal of one ovary does not significantly increase the risk of early menopause, as the ovaries are designed to work independently of each other. It is the gonadotoxic treatment (chemotherapy, radiotherapy etc.) that leads to destruction of the immature eggs within the ovarian tissue that leads to early menopause, irrespective of whether there is one or two ovaries present.

What will happen if you decide to go ahead?

1. Your treating doctor will complete a referral form, containing your personal details, your planned treatment schedule, pathology reports and clinic letters, and send it the FFPO for review of eligibility for ovarian tissue cryopreservation. The FFPO lead clinician may request further information or discuss the proposed treatment with you if there are any issues that need resolution before proceeding to plan treatment.

2. A blood test will be required to provide information on your current hormone levels.

3. If your referral is accepted, the team at your local referral centre will liaise with the FFPO team to arrange an appropriate surgery date and place for the surgery to obtain tissue. If at all possible, the surgery will be combined with another required procedure such as insertion of a central venous line for chemotherapy.

4. A member of the FFPO team will contact you to ensure you have received this information leaflet and have access to the website and video about the procedure. They will also ensure that you have a copy of the consent form which will need to be completed at a consultation meeting with a member of the FFPO team prior to surgery.

5. During the telephone consultation meeting, a member of the FFPO team will be able to answer all your questions and guide you through the consent form. You will need to sign the Cryopreservation consent form prior to the surgery.

6. Prior to surgery, the surgical team will explain the surgical side of the procedure as well as what to expect in the days after surgery. You will also have an opportunity to ask any questions related to the surgery prior to signing the surgical consent form.

7. During surgery, a blood sample will also be required to test for some infectious diseases that can be found in tissue. Small samples of tissue will also be used for quality assurance testing. This testing is a regulatory requirement for all patients who are storing tissue for future use.

8. Once the tissue has been transported to the Oxford tissue bank (OCTB) and cryopreserved, you will receive a summary letter from the FFPO, with details of your unique tissue bank storage number, contact details and a copy of your signed consent form for your records.

9. It is important that you make the OCTB aware of any change of address or circumstances. The OCTB will ensure that the data is held on a secure database and that the FFPO is aware of any changes.

What will happen if you want to use your tissue in the future?

If, following your treatment you experience loss of your fertility (i.e., early menopause) and you wish to start a family then we can explore the best way for your tissue to be used to try to restore fertility.

The initial step would be for you to contact your original Principal Treatment Centre or the FFPO or OCTB directly. You would be offered a Consultation in the Children and Young Adult Fertility Clinic to discuss the treatment options available to you.

Is there a risk that the tissue could contain cancer cells?

When the ovarian tissue is collected, a small sample will be examined by the histopathology team. They will look carefully at the tissue under the microscope to report on the quality of the tissue being stored and also the presence of any cancer cells.

For patients with blood cancers (e.g., leukaemia), there is a higher risk of cancer cells being found in the tissue as these cells circulate in the blood through the tissue. As the level of disease can be very low in the tissue, normal microscopes may not be sufficient to detect cancer cells. It is very likely that the use of more advanced and sensitive technologies will be required in the future to detect these cancer cells.

Any risks will be discussed in full at the time you potentially wish to use the stored tissue.

What happens when you no longer require your tissue?

The tissue we store will be for your use only and cannot be used or donated to another person. Should you no longer wish to store the tissue, or in the event you pass away we will need to know what your wishes are for this tissue. The tissue can either be discarded or, with your permission, donated for anonymous use in ethically approved research to help discover more about infertility in children and young adults and how stored tissue can be more effectively used to restore fertility. Your wishes will be discussed with you in full at the FFPO consent consultation prior to tissue collection.

If you have further questions or would like more details, please contact us

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Further information

If you would like an interpreter, please speak to the department where you are being seen.

Please also tell them if you would like this information in another format, such as:

- Easy Read
- large print
- braille
- audio
- electronic
- another language.

We have tried to make the information in this leaflet meet your needs. If it does not meet your individual needs or situation, please speak to your healthcare team. They are happy to help.

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